Estimation of interface resistance between testing chamber and soil model using shear box test

Abstract

This paper performs an estimation of interface resistance between testing chamber and soil model using shear box test. A different of bearing capacity factor was observed between the result from the physical and numerical modelling tests for soft soil reinforced by a group of soil cement columns. It was assumed that the interface resistance produced during the loading of the footing between the clay bed and the chamber sides (Perspex and Aluminium walls) contributed to the different. In order to determine the interface resistance between the test chamber walls (Perspex or aluminium) and the soil surface, a series of shear box tests was conducted. An interface resistance correction was proposed using the results from the shear box tests and an upper bound approach. By doing so, the inclusion of the resistance minimised the differences between the laboratory and numerical modelling bearing capacity results. As a conclusion, it was found that the shear box test and upper bound solution provided a better estimation of interface resistance on the physical modelling test.